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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/806,743

03/23/2004

Diwakar Garg

06500 USA

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23543

7590

10/04/2005

AIR PRODUCTS AND CHEMICALS, INC.
PATENT DEPARTMENT
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EXAMINER

LESTER, EVELYN A

ART UNIT

PAPER NUMBER

2873

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary	Application No.	Applicant(s)	
	10/806,743	GARG ET AL.	
	Examiner	Art Unit	
	Evelyn A. Lester	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14-16 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3-23-04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 3-23-2004 was filed before the mailing date of the first office action. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner.

Specification

2. On page 9, paragraph [0027], the Applicants need to update the status of the U.S. patent application, by amendment.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 9-12 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Westfall et al (U.S. Patent 6,515,787 B1).

Westfall et al is interpreted as disclosing the claimed invention, as especially noted for example in Figures 17-22 and their accompanying text, of an electrochromic device wherein at least one, but less than all, of the claimed element layers is provided by

plasma enhanced chemical vapor deposition (PECVD), wherein the claimed element layers include:

- a first electron conducting layer (electrode 80) on a substrate (20);
- a working electrode in communication with the first electron conducting layer (electrochromic or active layer 70);
- an ion conducting layer in communication with the working electrode (electrolyte 60);
- an ion storage electrode in communication with the ion conducting layer (50);
- and a second electron conducting layer in communication with the ion storage layer (second electrode 30).

Westfall et al's invention further discloses the working electrode or active layer is tungsten trioxide (WO_3 , note col. 4, lines 38-44) as recited in claim 10; the electrochromic device is completely solid state, as the invention's layers are deposited to particular thicknesses without sealing means and because the materials utilized in Westfall et al's invention are solid state materials, which collectively make the device solid state, as recited in claim 9; the electrochromic device also provides above the second electron conducting layer a "barrier layer," for example a hermetic sealing layer (note for example Figure 17), as recited in claim 11; and as part of the method of producing the electrochromic device the working electrode is provided "before or after" the second electron conducting layer is provided in communication with the ion storage layer, as recited in claim 12.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5-8, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Westfall et al (6,515,787 B1) in view of Van Dine et al (U.S. Patent 5,659,417).

Westfall et al discloses the claimed invention as described above, except for specifically reciting whether the working electrode and/or the ion storage electrode are the only layers provided by PECVD and the other layers are provided by vacuum sputtering. However, Westfall et al does teach that at least one of the layers of the invention is deposited by PECVD and at least one layer is deposited by vacuum deposition, which includes sputtering, as noted at col. 4, lines 53-58 and col. 6, lines 6-8. Van Dine et al teaches that particularly the working electrode (i.e. electrochromic layer) and the ion storage electrode (counter-electrode) be applied by conventional techniques (noted at column 5, lines 4-8), such as plasma enhanced chemical vapor deposition, which is a conventional technique as taught by Van Dine et al, at column 1, lines 53-57. One of the reasons for Van Dine et al to utilize the method of PECVD, is because these layers in particular are injected with a colorant ion, and PECVD allows for this step to be accomplished effectively and economically. It has been well

established in the electrochromic art, for example, that the deposition techniques used for forming the different discrete and continuous layers depends upon several parameters, such as the material being deposited, the thickness of the layer being deposited, the materials deposited in previous layers, etc. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the method of PECVD to provide the working and ion storage electrodes, due to the necessary controls of these thin film elements, as well as economic concerns.

Allowable Subject Matter

5. Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach or fairly suggest the claimed invention of a method for producing an electrochromic device, wherein the substrate is predeposited with a barrier layer and an electron conducting layer. Clearly this is an economical way in providing the necessary layers for the claimed invention.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hudgens et al (U.S. Patent 4,737,379) teaches PECVD, also referred to as "glow discharge deposition," and reasons it is a preferred method of providing layers or coatings.

The following are U.S. Patents directed to electrochromic and/or electrochemical products and their methods of manufacturing:

Ellis, Jr. et al	U.S. Patent 5,724,177
Ellis, Jr. et al	U.S. Patent 5,757,537
Badding et al	U.S. Patent 5,919,571
Giron	U.S. Patent 5,985,486
Zhang et al	U.S. Patent 6,156,395

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Evelyn A. Lester whose telephone number is (571) 272-2332. The examiner can normally be reached on subject to an increased flex schedule, M-F, 10-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Evelyn A. Lester
Primary Examiner
Art Unit 2873